

# A Disaggregated Approach to the Public Spending-Growth Nexus in Nigeria

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**Abstract.** Optimising limited budgetary resources by directing spending to high-impact areas such as technology, health, and education is a major challenge for policymakers. This paper examines the effect of public expenditure on economic growth in Nigeria by disaggregating it into capital and recurrent components. The novelty of this study lies in its disaggregated approach, which is highly relevant, as it offers policy recommendations to aid the achievement of SDG 8 in Nigeria. The study's data covered the period 1985 to 2022. They were analysed using the augmented Dickey-Fuller unit root test, the Johansen cointegration test, the vector error correction model (VECM) for estimation, and the impulse response function. Findings from the study portrayed that the recurrent expenditure components that stifle growth were economic services, social and community services, and transfers. In contrast, the recurrent expenditure component that propels growth was administration. Further, all capital expenditure components, except administration, were observed to positively affect the growth of the Nigerian economy during the period of analysis. The impulse response functions also indicated that growth responded negatively to shocks in most recurrent expenditure components but positively to shocks in capital expenditure components. The study recommended substantially reducing capital expenditure on administration. In contrast, expenditure on areas such as social and community services should be increased, as they have a long-term impact on promoting growth.

**Keywords:** Economic growth, government expenditure, Keynesian economics, VECM.

## INTRODUCTION

The relationship between government expenditure and economic growth, grounded in Keynesian macroeconomics, is one of the most fundamental topics in macroeconomic research. Following the emergence of Keynesian economics, government expenditure is seen as a crucial component of aggregate demand. In response to the Great Depression of that era, Keynesian economists established a mainstream

from which a large portion of contemporary macroeconomic research operates. They also served as the foundation for a variety of economic policies in both developed and developing nations. Despite criticisms of the applicability of Keynesian theory, government spending remains a primary fiscal policy tool in many developing nations, such as Nigeria. For

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this reason, the problem is still relevant today (Wolff & Resnick, 2012).

The government's goals often serve as the basis for the general spending pattern that has developed over time. The government has stated these goals in several policy documents over time. Generally, these objectives are high economic growth, reduced unemployment, price stability, a favourable balance of payments, and an equitable distribution of income. Other specific objectives that are usually rapidly pursued to achieve these objectives include hasty industrialisation, increased food production for local consumption, and greater economic diversification.

These macroeconomic goals are usually pursued simultaneously, although economists often discuss the possibility of a trade-off. The pursuit of economic growth has often been given priority because it is linked to achieving other goals. For example, an increase in production requires an increase in the employment of factor inputs (including labour), and an increase in aggregate supply (output) can reduce the general price level in the event of high inflation. Indeed, other macroeconomic goals can directly or indirectly be linked to economic growth, including industrialisation and diversification. Economic growth and government expenditure are linked because government expenditure can be used to promote factors that enhance economic growth.

In many economies, government expenditure is used to improve technology through scientific research, develop human capital through investment in education, and create the inducements and an empowering atmosphere to spur private-sector investment through infrastructure development. Technological progress, human capital development, and infrastructural development, which are usually the targets of public spending, are all economic growth-inducing factors.

In theoretical arguments, there are two major divergent views about the efficacy of government expenditure in promoting economic growth. Traditional classical economic thinking does not advocate using government expenditure to improve economic conditions, extolling the virtues of the price system for efficiently allocating economic

resources to produce the best socially acceptable outcome. At the same time, Keynesian economics strongly recommended government expenditure as a viable means of stimulating economic growth, highlighting market failure. However, in recent times, economists have ceased to be either Keynesians or opposed to Keynesianism. Instead, they have resorted to a synthesis of any kind that is indispensable in classical and Keynesian economic theories of income determination.

Classical and Keynesian ideas have become essential components of other macroeconomic theories. This is because the two theories apparently contain useful ideas for economic policy decisions. The synthesis of classical and Keynesian economics leads to the assumption of rational producer and consumer behaviour, as in neoclassical economics. This effort has led to the development of economic models that are analysed under different sets of assumptions to produce long-run neoclassical solutions and short-run Keynesian solutions (Dixon, 2008).

Over the years, the Nigerian government's economic managers have relied on government expenditure to bring about the desired economic growth. To achieve sustainable development in Nigeria, the government should provide basic public infrastructure that is fundamental to the economy (Aluthge, Jibir & Abdu, 2021). These public infrastructures include road construction, adequate security, a sound health care system, and a constant water and power supply. There have also been policies of deregulation in certain sectors of the economy to promote competition and efficiency, reflecting the classical view of relying on market forces. Yet governments still have to help economic agents enforce contracts and protect people's property in those deregulated sectors, thereby reinforcing the government's important role in the economy (Ifarajimi & Ola, 2017). Optimising limited budgetary resources by directing spending to high-impact areas such as technology, health, and education is a major challenge for policymakers.

In Nigeria, the government allocates significant funds to capital and recurrent expenditure each year. The Nigerian government is the largest employer of labour in

the economy, yet there is still a significant infrastructure deficit, notably in power and infrastructure. Moreover, indicators such as unemployment, inflation, poverty and income inequality are worsening. These economic realities bring to mind a rather old, very basic question: the impact of government expenditure on the economy. Do government expenditure or the components of government expenditure have any significant impact on economic growth in Nigeria? Which expenditure components drive long-run growth in Nigeria? The government spent on administration, social and community services, economic services and transfers. Each component of government expenditure could have a different impact on economic growth. Therefore, in this article, we disaggregate government expenditure into its various components to examine their respective impacts on economic growth. Consequently, the objective of this study is to examine the differential effects of recurrent and capital expenditure on growth using disaggregated fiscal data.

The novelty of this study lies in applying the VECM model to disaggregated expenditure components for 1985–2022. This strategy narrows down the specific effects of each expenditure component (under both capital and recurrent) on the growth of the Nigerian economy. The study is of immense importance, as it offers policy recommendations to help achieve SDG 8 in Nigeria.

## LITERATURE REVIEW

### *The Keynesian Theory of Government Expenditure*

The earliest theoretical discussion about the relationship between government expenditure and economic growth is found in the body of Keynesian macroeconomics. Government expenditure has often been considered the main focal point of Keynesian economics. Keynesian theory identifies government expenditure as a component of aggregate demand and a policy tool that can be used to change aggregate demand, output, and employment by affecting other components of aggregate demand, such as consumption and investment.

The aggregate demand for the products and services an economy can produce at any given time drives national output and employment, according to Keynesian theory. The explanation shows that, depending on the overall level of aggregate demand at that moment, the actual level of national income may not equal the level at full employment. The only way to raise aggregate demand and production, and employment if consumption and investment are stable at a given moment, is for the State to stimulate aggregate expenditures.

Therefore, as a policy tool, Keynesian economics recommends that changes in government expenditure (expansionary and contractionary fiscal policy) should be used to correct the deficiency in aggregate demand and thus solve the problem of unemployment and economic growth, rather than relying on the price system to correct such a deficiency, because prices are not as flexible as believed by the neoclassical economists. Keynes believed that prices are flexible upwards but sticky downward. He added that when the price system fails, the time lag before the economy adjusts to stability may be too long to wait for and hence the need for government intervention through its expenditure (Ebeling, 2004).

It has been argued that the policy recommendation of the Keynesian theory is demand-side, whereas there could also be a deficiency in aggregate supply. This is especially true for developing economies with very low productive capacities. Such a view has been expressed by many economic researchers about the Nigerian economy. Some also argued that the Keynesian theory fails to account for the implications of long-term economic decisions. Although there are justifications for criticism, Keynesian economics remains the most fundamental justification for conducting fiscal policy. In this study, the effect of government expenditure on economic growth in Nigeria is analysed in the light of the Keynesian theory.

### *Wagner Theory of Government Expenditure*

Here, it is explained that a nation's industrial and economic progress corresponds with a rise in government spending. This hypothesis is based on the presumption that when an economy industrialises, a nation's real

income per capita rises, and the proportion of public spending is expected to increase as well (Babatunde, 2011). This implies that rising government spending will coincide with a nation's industrial sector development. As a result, higher government spending – whether capital or ongoing – occurs to support industrial and growth processes.

The following arguments are put forth by Bird (1971) to support this postulation: (i) with increased industrialization of the economy, the States' administrative and protective role will require a substantial capital expenditure; (ii) with expansion in the industrial sector, the need for increased provision of social and cultural goods and services will be prevalent; and (iii) public spending will be vital to manage and finance natural monopolies and safeguard the hitch-free functioning of market forces.

There is also the argument that, in a developing economy, the government would have advantages over the private sector (such as access to capital) (Peacock, 2003). This is because economic expansion will inevitably create systemic shocks, and government action will be necessary to mitigate their effects. In addition, the private sector will welcome the government's participation in ensuring the effectiveness and sustainability of essential services, such as security, health care, and infrastructure. The government will need to spend more money to provide these services. Thus, the key tenet of Wagner's thesis is that government spending often rises in proportion to the pace of development of the nation's industrial sector.

#### ***Endogenous Growth Model***

Endogenous growth theory extended the Harrod-Domar growth model by including labour as a production factor and incorporating technology. This model demonstrates how labour, capital accumulation, and technological advancements account for long-term economic growth. Consistent with this theory, new capital is more valuable than old capital because it is more likely to be generated with updated, more advanced technologies. The theory assumes that the degree of technology is exogenously determined or unaffected by other elements of the model. Technical advancement is also said to be fueled by capital accumulation. The

endogenous growth model implies that government expenditure affects growth through its effect on capital and labour. This could be through government investment in capital projects, education, health and other expenditures that impact labour and capital.

#### ***Keynesian Theory of Growth***

The Keynesian theory of growth emphasised that changes in aggregate demand are the main driver of short-run economic growth. The theory did not capture the long-run perspective in the analysis of growth. It identifies consumption (C), investment (I), government expenditure (G), and net exports (X<sub>n</sub>) as components of aggregate demand.

Given the theory, inflation arises when aggregate demand exceeds aggregate supply at the full-employment level of income. It is a short-run analysis that assumes the price level is fixed and determined by non-monetary forces. At the same time, output is said to be more variable and fundamentally shaped by vicissitudes in investment, driven by changes in interest rates. The Keynesian theory of growth clearly shows that government expenditure is a determinant of economic growth.

#### **Empirical Literature: The Nigerian Case**

Adamu and Hajara (2015) used yearly data from 1970 to 2012 to examine the effect of governmental spending on economic growth. In their investigation, they used the Granger causality test and the ordinary least squares (OLS) regression. The study's empirical results demonstrated that, whereas recurrent spending had a large positive influence on economic growth, capital expenditure and growth had a positive but minor association. The causality test demonstrates a unidirectional causal relationship between fiscal factors and economic development.

Using yearly data from 1970 to 2010, Usman and Agbede (2015) investigated the connection between economic growth and government spending. They used the Granger causality test, cointegration, and the error-correcting regression model. The findings of the cointegration test demonstrated a positive and statistically significant linear long-term relationship between the two categories of government spending and economic growth;

however, the estimate of the error correction model, which accounts for short-term variations, indicated that recurrent spending and economic growth are positively correlated, while capital expenditure and economic growth are negatively correlated.

Adebayo and Alao-Owunna (2016) examined the link between government expenditure and economic growth in developing countries, using Nigeria as a case study and annual data from 200 to 2015. They employed ordinary least squares (OLS) regression and a cointegration test. Their finding showed that both recurrent and capital expenditure have a positive and significant effect on economic growth in Nigeria. They recommend increased spending on capital projects and greater monitoring of government spending.

Leye Sherifdeen *et al.* (2016) examined the nexus between public expenditure and economic growth using annual data from 1981 to 2013. They used ordinary least squares regression for the analysis. Their findings show a significant relationship between government expenditure and economic growth. Capital expenditure negatively affected economic growth, while recurrent expenditure positively affected it. They recommend instilling fiscal discipline and surveillance on capital spending.

Using yearly data from 1970 to 2017, Okolo, Edeme, and Emmanuel (2018) conducted an economic study of capital expenditure and infrastructure development in Nigeria. They examined the relationship between capital expenditure and infrastructure development. They make use of the ARDL model. Their research revealed that, although external debt limits economic development, capital, ongoing, and construction spending all have a major long-term influence. They advise cutting back on ongoing expenses.

Okoye *et al.* (2019) examined the relationship between government expenditure and economic growth in Nigeria using annual historical data from 1981 to 2017. They model variables in an ARDL model. Aggregate government expenditure and constituent parts (capital and recurrent) were used for the analysis, while controlling for inflation. The study's findings show a significant negative short-run effect of lagged recurrent expenditure on

economic growth and a strong positive effect of lagged capital expenditure on growth. But there is no evidence of the long-run effect of government expenditure on economic growth. They recommended allocating more funds to capital expenditure.

Using yearly data from 1981 to 2017, Ejem, Oriko and Nwakodo (2019) investigated the impact of government recurrent expenditure on economic growth in Nigeria. The analysis employed an error correction model, a causality test, and a cointegration test. Regressors included ongoing costs for social, administrative, and financial transfers. The analysis's conclusion demonstrated that all the explanatory factors had a positive and substantial impact on economic growth, except for recurrent administrative spending, which had a negative impact. They suggested raising recurrent spending on social and financial services.

Orimolade and Olusola (2019) studied the nexus between government expenditure and economic growth from 1970 to 2016. They used cointegration and error correction. The explanatory variables used in their model are capital expenditure, recurrent expenditure, physical capital, and human capital. The long-run empirical results of the long-run Co-integration equation demonstrated negative relationships between GDP and government capital expenditure, physical capital expenditure, and the exchange rate. In the long run, however, government recurring expenditure and human capital are positively correlated with GDP.

Effiong and Inyang (2020) investigated the impact of government spending on the economic growth of 15 West African nations. The influence of government spending on the economic growth of each of the 15 nations was examined using ordinary least squares (OLS). Nonetheless, the influence of government spending on West Africa's overall economic growth was assessed using a fixed-effects least-squares dummy variable (LSDV) panel regression. The study's conclusions showed that government spending significantly and favourably influences the economic growth of each of the 15 West African nations.

Onifade *et al.* (2020) studied the effects of public spending on economic growth from 1981 to 2017, with a focus on the Nigerian economy.

The impact study was conducted using the ARDL technique. The presence of a level link between public spending metrics and economic growth in Nigeria was substantiated by empirical evidence. Over the course of the study, it was shown that government recurring spending had a significant negative effect on economic growth, whereas public capital expenditures had no significant beneficial effect.

Studied the impact of different government expenditure components on economic growth in Nigeria between 1981 and 2020. They embraced the Granger Causality Test and the Error Correction concept. According to the short-run model, government spending on recurring health, education, and agricultural expenses has a negligible negative effect on economic growth. Government capital spending on social services has been shown to have a negative, substantial effect on economic growth. On the other hand, government capital expenditures on economic services had a marginally beneficial effect on Nigeria's economic growth. Over an extended period, every facet of government spending shown a noteworthy impact on economic expansion.

Udonwa and Effiong (2023) examined the influence of public spending on economic growth in Nigeria by testing the neutrality/non-neutrality of recurrent expenditure and assessing the interaction between the two expenditure components and monetary policy (interest rate) on economic growth. Data covering the period 1981 to 2021 were analysed using the ARDL model. The results suggest that recurrent expenditure exerts a positive and significant effect on economic growth, thereby indicating the non-neutrality of the recurrent expenditure component.

Okijie and Effiong (2024) investigated the influence of public expenditure in promoting rural development in Nigeria during 2000-2020. People practising open defecation, access to drinking water (both basic and safely managed), access to sanitation (both basic and safely managed), and access to electricity were among the key rural development indicators measured. The ordinary least squares estimation approach was used in the analysis. The study's findings showed that public investment in social community services significantly reduced the

number of rural Nigerians practising open defecation while increasing access to safe drinking water, sanitation, and electricity.

### **Empirical Literature: The International Perspective**

In their investigation of the influence of income distribution inequality on economic growth in developing nations, Ahuja and Pandit (2022) found that government expenditure on health and education had a favourable effect, but social security spending had no effect. In most EECA nations, government expenditure and growth exhibit a nonlinear relationship resembling a credit-driven cycle, according to Shaddady's 2022 analysis. Using the GMM approach, Nguyen and Bui (2022) found a negative correlation between public spending, corruption control, and economic development in Asian countries.

In their analysis of the relationship between Algeria's economic growth and government spending on human capital development, Ramli *et al.* (2022) found no long-term cointegration between the two variables, suggesting that government spending alone cannot sustain economic growth in the face of corruption. Poku *et al.* (2022) emphasised the substantial short- and long-term effects of foreign direct investment and gross capital creation, as well as the favourable short-term association between government expenditure and economic growth. Ziberi *et al.* (2022) used data from 1917 to 2020 and the two-stage least-squares instrumental variables technique to examine the effect of public education investment on economic growth in North Macedonia. The findings show that economic growth will benefit from a one-point increase in public education investment.

Arawatari *et al.* (2023) investigated the link between productive government spending and economic growth in the United States of America. A R&D-based model of endogenous growth was utilised, with agents possessing varying entrepreneurial capacities. The study found that if the number of high-ability entrepreneurs is not trivial, the relationship between the government spending/GDP ratio and the economic growth rate is an inverted U-shaped curve with a flat top. The flat top of the curve shows that changes in government

spending size have little effect on growth. The study calibrated the model with US data and practically confirmed the theoretical predictions. The theoretical and numerical findings suggest that the discussion of the link between government size and economic growth may be misguided, unless the government is exceptionally large or small.

Using data from 1967 to 2020, Ndanshau and Madadila (2023) conducted an empirical investigation of the relationship between government consumption and economic growth in Tanzania. Given the conditioning parameters, the ARDL limits cointegration test showed that government spending and economic growth were cointegrated. It also showed a minor but statistically significant positive long-run influence of government size on economic growth. According to the ECM results, private investment had a positive but statistically insignificant short-term impact on economic growth. In contrast, government size had a negative and statistically insignificant short-term effect. The results corroborate the traditional theory, which holds that government spending has little long-term beneficial impact on GDP.

Nhemhafuki (2023) investigated the link between economic growth and government spending, controlling for population and trade openness. The study used yearly cross-sectional time-series data on the relevant variable from 117 nations from 2001 to 2021. The Random Effect model was employed in the analysis. Thus, random-effect regression was used to determine the effects of explanatory and control factors on the dependent variable. Government spending as an explanatory variable shows a positive link with economic growth, even after adjusting for population and trade openness. Both control variables are shown to have a favourable connection with economic growth.

Delgado (2023) used quantile regression to empirically investigate the relationship between EU public spending and economic growth from 2004 to 2019. The findings demonstrated that overall public spending had a negative, substantial effect on economic growth, especially at the top of the growth distribution. Examining the three primary categories of public spending in greater detail and accounting for their share of overall spending, the analysis

found that while social protection and education expenditures have a negative impact, health spending has no discernible effect. At the bottom of the growth range, this detrimental effect is even more pronounced.

Coronel and Díaz-Roldán (2024) examined how public education spending affected growth, earnings, and productivity at the EU level. Their results did not show a direct and unambiguous link between production and public education spending. Rather, they showed an indirect association: higher levels of human capital and technological capabilities were acquired through increased public investment, which, in turn, led to higher production.

Okunlola et al. (2024) examined the impact of government spending on actual growth in ECOWAS nations. This study examined the effect of government spending on economic development for a sample of 15 ECOWAS nations between 1999 and 2021 using panel cointegration techniques. Four models are estimated in the study using the POLS, FMOLS, and DOLS methods. The analysis backs the idea that actual economic growth in ECOWAS nations is positively impacted by government spending. Nonetheless, we also discovered that increased corruption control enhances the efficacy and efficiency of public spending in fostering economic expansion.

Additionally, a greater frequency of conflict reduces the efficiency and efficacy of government spending in fostering economic expansion. The results imply that a well-run government can positively impact economic growth. The discovery that real growth in ECOWAS nations is positively impacted by government spending implies that a well-run government may support economic expansion.

Sosvilla-Rivero et al. (2025) examined how public spending affects economic growth in the short- and long-run. The study employed the Autoregressive Distributed Lag (ARDL) panel data technique to estimate a growth model enhanced by public expenditure, using yearly data from 28 EU nations for 1995–2022. The findings lend credence to the idea that different public spending categories have varying short- and long-term effects on the economic performance of EU nations.

Examined the dynamic relationships among Somalia's population growth, foreign direct investment, gross fixed capital formation, government spending, and economic development from 1990 to 2022. The study uses the Autoregressive Distributed Lag (ARDL) bounds testing technique, grounded in Keynesian, Endogenous Growth, and Neoclassical economic theories, to evaluate the short- and long-term effects of key macroeconomic factors on real GDP growth. According to the long-term findings, population growth and government spending both improve economic growth by 1.27% and 1.45%, respectively, for every 1% increase. In contrast, the long-term benefits of foreign direct investment and gross capital creation are statistically negligible. While population growth (4.09) and gross fixed capital formation (0.28) accelerate growth in the near term, government spending has a negative impact (-0.21), indicating short-term inefficiency. These results highlight the need for targeted fiscal changes, such as shifting government expenditure to more productive sectors, investing in human capital to capitalise on demographic trends, and strengthening regulatory frameworks to enhance the effectiveness of foreign direct investment.

#### Summary of Literature

According to a literature review, researchers in Nigeria have conducted several studies on the relationship between economic growth and government spending over the years. In these studies, some researchers divided government spending into capital and ongoing spending, while others further subdivided it into

specialised categories, such as health, education, and other initiatives. Nonetheless, as previously stated, the primary categories of government spending in Nigeria include transfers, economic services, social and community services, administration, and other subcategories, including health and education. Consequently, these primary components of government spending are included as regressors in our investigation. Furthermore, capital and recurrent expenditures are employed as regressors, which are more comprehensive measures of government spending. By using these aspects of government spending as explanatory variables, the literature will be greatly expanded, and a greater understanding of how government spending affects economic growth in Nigeria will be provided.

## METHODOLOGY

### *Model Specification*

The model of this study is based on the postulates of Keynesian macroeconomics, in which government expenditure is identified as an essential component of aggregate demand and as a policy variable the fiscal authority can use to influence output and employment. Thus, economic growth is expressed as a function of government expenditure disaggregated into its various categories. The disaggregated categories are recurrent expenditure and capital expenditure on administration, economic services, social and community services, and transfers. Hence, the following models are specified.

#### Model I: Recurrent expenditure and Growth

$$RGDP_t = f(RADME_t, RECSE_t, RSCSE_t, RTRNE_t) \quad (1)$$

where RGDP is the growth rate of real GDP, which is a proxy for economic growth; RADME is recurrent expenditure on administration; RECSE is recurrent expenditure on economic services; RSCSE is recurrent

expenditure on social and community services; and RTRNE is recurrent expenditure on transfers.

Equation (1) is therefore translated into an estimable form as follows:

$$RGDP_t = \alpha_0 + \alpha_1 RADME_t + \alpha_2 RECSE_t + \alpha_3 RSCSE_t + \alpha_4 RTRNE_t + \mu_t \quad (2)$$

Where the partial slope coefficients of the regressors are given by  $\alpha_1$ ,  $\alpha_4$  and  $\mu$  represents the error term

**Model II:** Government Capital Expenditure and Growth

$$RGDP_t = f(CADME_t, CECSE_t, CSCSE_t, CTRNE_t) \tag{3}$$

where RGDP is the growth rate of real GDP, a proxy for economic growth; CADME is capital expenditure on administration; CECSE is capital expenditure on economic services; CSCSE is capital expenditure on social and community services; and CTRNE is capital expenditure on transfers.

$$RGDP_t = \beta_0 + \beta_1 CADME_t + \beta_2 CECSE_t + \beta_3 CSCSE_t + \beta_4 CTRNE_t + \mu_t \tag{4}$$

where the partial slope coefficients of the regressors are given by  $\beta_1$  to  $\beta_4$ , the constant of the regression model is given by  $\beta_0$  and  $\mu$  represents the error term.

***A priori Expectation***

All explanatory variables are expected to have positive relationships with economic growth. This is based on the Keynesian and endogenous growth theories, which suggest greater government intervention in a modern economy.

***Estimation Technique***

The estimation process for the model with time-series variables begins by determining the integration order of the variables using the Augmented Dickey-Fuller unit root test. The ADF technique is conducted under the assumption of a constant, deterministic time trend, and the lag length is selected automatically using the Akaike Information Criterion. The Johansen cointegration test is used to ascertain the existence of a long-run relationship in the model, and the vector error correction model is

Equation (3) is therefore transformed into an estimable form as follows:

then used to estimate the long-run parameters. The VECM technique is used because the variables are all stationary in first differences, enabling us to capture both short-run dynamics and long-run equilibrium relationships in the model. The impulse response function was also used to examine how the regressand (RGDP) responded to shocks across the various government expenditure components.

***Nature and Sources of Data***

The data used for this study span 1985 to 2022. The data were all collected from the Central Bank of Nigeria's statistical bulletin (2022 edition). The period selected for the study is long enough to encompass diverse political epochs and reflect the economic policy decisions that have shaped the Nigerian economy over the years. Again, the selected period (38 years) is long enough to capture variations in economic growth in response to public spending. The Table below presents the variables in use, their sources, units of measurement, and expected signs.

**Table 1:** Description of the variables

Variables	Description	Unit of Measurement	Source	Expected Sign
<b>RGDP</b>	Real gross domestic product (a proxy for economic growth)	Percentage annual growth rate	Central Bank of Nigeria (CBN)	-
<b>RADME</b>	recurrent expenditure on administration	Percentage of total expenditure	CBN	Positive

<b>RECSE</b>	recurrent expenditure on economic services	Percentage of total expenditure	CBN	Positive
<b>RSCSE</b>	recurrent expenditure on social and community services	Percentage of total expenditure	CBN	Positive
<b>RTRNE</b>	recurrent expenditure on transfers	Percentage of total expenditure	CBN	Positive
<b>CADME</b>	capital expenditure on administration	Percentage of total expenditure	CBN	Positive
<b>CECSE</b>	capital expenditure on economic services	Percentage of total expenditure	CBN	Positive
<b>CSCSE</b>	capital expenditure on social and community services	Percentage of total expenditure	CBN	Positive
<b>CTRNE</b>	capital expenditure on transfers	Percentage of total expenditure	CBN	Positive

Source: Compiled by the authors.

## RESULT

### *Unit Root Test*

This study utilises time-series data; hence, the need to ascertain the stationarity properties

of the variables becomes pertinent. Table 2 provides information on the integration order of the variables in both Model I and Model II.

**Table 2:** Unit Root Test Result

Variables	ADF Statistic	Probability	Order of Integration
<b>Model I</b>			
<b>RADME</b>	-7.0356	0.0000**	I(1)
<b>RECSE</b>	-7.7659	0.0000**	I(1)
<b>RSCSE</b>	-5.9122	0.0003**	I(1)
<b>RTRNE</b>	-8.6567	0.0000**	I(1)
<b>RGDP</b>	-3.9353	0.0206*	I(1)
<b>Model II</b>			
<b>CADME</b>	-10.0603	0.0000**	I(1)
<b>CECSE</b>	-7.0403	0.0000**	I(1)
<b>CSCSE</b>	-8.4228	0.0000**	I(1)
<b>CTRNE</b>	-9.4936	0.0000**	I(1)
<b>RGDP</b>	-3.9353	0.0206*	I(1)

Note: \* and \*\* denote significance at 5% and 1% respectively.

Source: Researcher Computation.

The results presented in Table 2 indicate that, in both Model I and Model II, all variables were stationary at first differences; hence, they are I(1) time series variables. Consequently, it is necessary to ascertain whether there is a long-

run relationship in the models by conducting a cointegration test.

### *Cointegration Analysis*

To establish the existence of a long-run relationship in the model, cointegration analysis is conducted, and the results are presented in

Tables 3 and 4 for Model I and Model II, respectively.

**Table 3:** Cointegration Test Result for Government Recurrent Expenditure Model

<b>Trend assumption: Linear deterministic trend</b>				
<b>Series: RGDP RADME RECSE RSCSE RTRNE</b>				
<b>Lags interval (in first differences): 1 to 2</b>				
<b>Hypothesized No. of CE(s)</b>	Eigenvalue	Trace Statistic	0.05 Critical Value	Probability
<b>None *</b>	0.889854	158.8469	69.81889	0.0000
<b>At most 1*</b>	0.741406	81.63864	47.85613	0.0000
<b>At most 2*</b>	0.487987	34.30130	29.79707	0.0142
<b>At most 3</b>	0.209287	10.87210	15.49471	0.2195
<b>At most 4</b>	0.073009	2.653388	3.841466	0.1033
<b>Unrestricted Cointegration Rank Test (Maximum Eigenvalue)</b>				
<b>Hypothesized No. of CE(s)</b>	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Probability
<b>None *</b>	0.889854	77.20829	33.87687	0.0000
<b>At most 1*</b>	0.741406	47.33734	27.58434	0.0000
<b>At most 2*</b>	0.487987	23.42921	21.13162	0.0233
<b>At most 3</b>	0.209287	8.218708	14.26460	0.3569
<b>At most 4</b>	0.073009	2.653388	3.841466	0.1033

*Source:* Researcher Computation.

*Note:* \* signifies the existence of cointegrating relationship(s).

For the recurrent expenditure model, three cointegrating equations are observed, as reported by both the Trace Statistics and the Max-Eigen Statistic. Hence, we cannot reject any evidence

against the existence of a long-run relationship in the model. Thus, we will estimate the Vector Error Correction Model (VECM) to obtain parameter estimates.

**Table 4:** Cointegration Test Result for Government Capital Expenditure Model

<b>Trend assumption: Linear deterministic trend</b>				
<b>Series: RGDP CADME CECSE CSCSE CTRNE</b>				
<b>Lags interval (in first differences): 1 to 2</b>				
<b>Hypothesized No. of CE(s)</b>	Eigenvalue	Trace Statistic	0.05 Critical Value	Probability
<b>None *</b>	0.899445	112.1249	79.34145	0.0000
<b>At most 1*</b>	0.459587	40.91631	55.24578	0.4732
<b>At most 2*</b>	0.400388	21.83826	35.01090	0.5860
<b>At most 3</b>	0.165757	5.982620	18.39771	0.8702
<b>At most 4</b>	0.011689	0.364486	3.841466	0.5460
<b>Unrestricted Cointegration Rank Test (Maximum Eigenvalue)</b>				
<b>Hypothesized No. of CE(s)</b>	Eigenvalue	Max-Eigen	0.05 Critical Value	Probability

<b>None *</b>	0.899445	71.20859	37.16359	0.0000
<b>At most 1*</b>	0.459587	19.07805	30.81507	0.6247
<b>At most 2*</b>	0.400388	15.85564	24.25202	0.4251
<b>At most 3</b>	0.165757	5.618135	17.14769	0.8520
<b>At most 4</b>	0.011689	0.364486	3.841466	0.5460

Source: Researcher Computation.

Note: \* signifies the existence of cointegrating relationship(s).

The results in Table 4 indicate the presence of three cointegrating equations, as indicated by both the Trace statistic and the Max-Eigen Statistic. This therefore provides evidence of a long-run relationship in the model; hence, the

VECM approach is also adopted in the estimation of the capital expenditure model.

#### **Vector Error Correction Model**

The long-run model is estimated for both Model I and Model II and is presented in Tables 5 and 6, respectively.

**Table 5:** The VECM Result for the Recurrent Expenditure Model

<b>Variables</b>	<b>Cointegrating Equation</b>
<b>RGDP(-1)</b>	1.000000
<b>RADME(-1)</b>	1.486097
	(0.15609)
	[9.52081]
<b>RECSE(-1)</b>	-0.128347
	(0.07175)
	[-1.78869]
<b>RSCSE(-1)</b>	-1.062684
	(0.09977)
	[-10.6508]
<b>RTRNE(-1)</b>	-0.449601
	(0.07146)
	[-6.29139]
<b>C</b>	-10.49819
<b>CointEq1</b>	-0.025240
	(0.02884)
	[-8.87507]
<b>R-squared</b>	0.414016
<b>Adj. R-squared</b>	0.133763
<b>F-statistic</b>	19.477292
<b>Akaike AIC</b>	-3.599781

Source: Researcher Computation.

The corresponding long-run VECM results in Table 5 indicate that recurrent expenditure on administration had a positive and significant effect on economic growth. A 1% increase in recurrent administrative

expenditure leads to a 1.4861% increase in economic growth. For recurrent expenditure on economic services, the effect is reported to be negative and statistically significant. Hence, a 1% increase in recurrent expenditure on

economic services will lead to a 0.1283% decrease in economic growth.

The effect of recurrent expenditure on social and community services exerted a significant long-run effect on the economy's growth. The coefficient indicated that a 1% increase in recurrent expenditure on social and community services will lead to a 1.0628% decrease in economic growth. The effect of recurrent expenditure on transfers also exerted a negative and significant effect on economic growth during the study period. Therefore, a 1% increase in recurrent expenditures on transfers will, on average, lead to a 0.4496% decrease in economic growth.

The error-correction mechanism indicates that only 2.52% of the short-run distortions in the model are corrected annually. The adjusted R-squared portrays that recurrent government expenditure accounted for about 41.40% of the total variation in

economic growth during the study period. The overall model is significant, as indicated by the F-statistic.

The established negative effect of recurrent expenditure on economic services and social and community services indicates that recurrent expenditure stifles economic growth in Nigeria. This therefore points to the fact that increased allocation of resources to these recurrent expenditure components will not spur growth; rather, it will inhibit growth. Thus, the findings showcase that recurrent expenditure in Nigeria is not growth-inducing.

Our result on the positive effect of recurrent expenditure on economic growth aligns with the work of Effiong and Inyang (2020), Ziberi et al. (2022) and Udonwa and Effiong (2023), while the negative effect of the recurrent expenditure components collaborates the findings from Onifade et al. (2020), Delgado (2023), and Arawatari et al. (2023).

**Table 6:** The VECM Result for the Capital Expenditure Model

Variables	Cointegrating Equation
<b>RGDP(-1)</b>	1.000000
<b>CADME(-1)</b>	-4.206595
	(0.40845)
	[-10.2990]
<b>CECSE(-1)</b>	1.094301
	(0.13524)
	[ 8.09168]
<b>CSCSE(-1)</b>	3.032090
	(0.36682)
	[ 8.26585]
<b>CTRNE(-1)</b>	0.105934
	(0.11038)
	[0.95974]
<b>C</b>	-9.146845
<b>CointEq1</b>	-0.024052
	(0.00765)
	[-3.14314]
<b>R-squared</b>	0.659924
<b>Adj. R-squared</b>	0.463038
<b>F-statistic</b>	13.351809
<b>Akaike AIC</b>	-4.31276

*Source:* Researcher Computation.

The results in Table 6 indicate that capital expenditure on administration had a negative and significant long-run effect on economic growth in Nigeria during the study period. A 1% increase in capital expenditure on administration will lead to a 4.2066% decrease in Nigeria's economic growth. For capital expenditure on economic services, the effect is positive and statistically significant. Therefore, an increase in capital expenditure on economic services will boost economic growth. Hence, capital expenditure on economic services is a driver of growth, and a 1% increase in such, lead to a 1.0943% increase in economic growth.

Capital expenditure on social and community services had a positive and significant impact on economic growth. From the coefficient, a 1% increase in capital expenditure on social and community services will, on average, lead to a 3.0321% increase in economic growth. Capital expenditure on transfers exerted a positive and significant effect on economic growth during the period of analysis. The coefficient indicated that a 1% increase in capital expenditure on transfers will lead to a 0.1059% increase in economic growth in Nigeria.

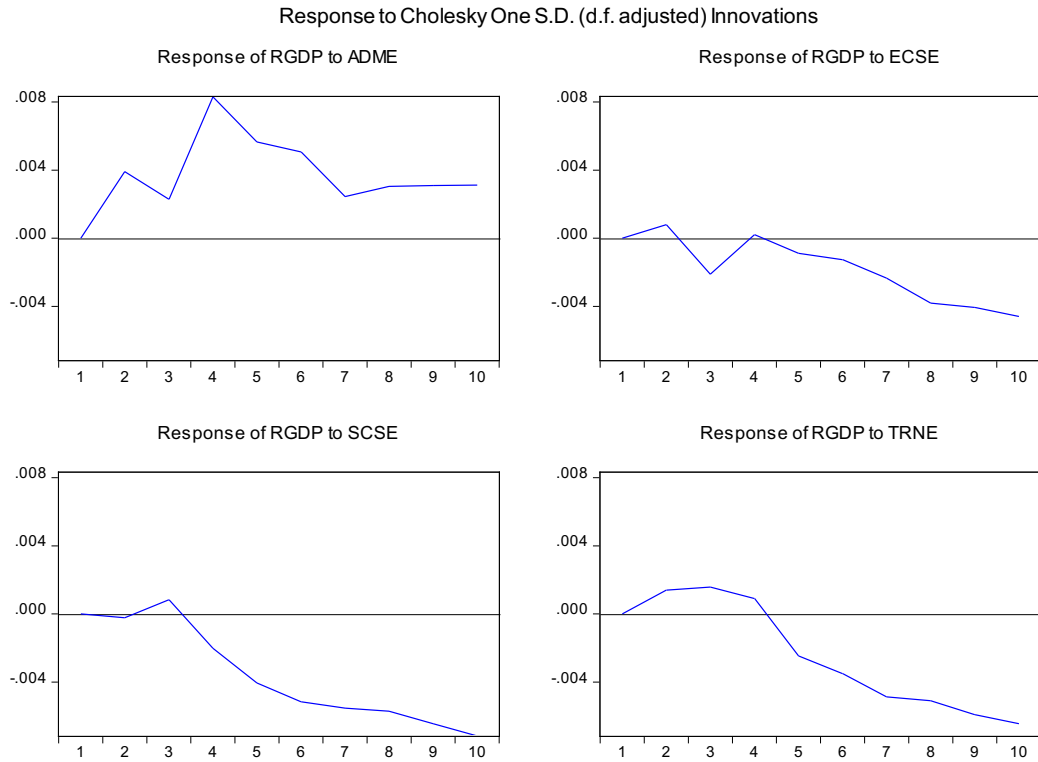
The error-correction model indicated that only 2.41% of the total short-run distortions are corrected annually for the equilibrium to be restored. The R-squared indicated that capital expenditure accounted for 65.99% of the total changes in economic growth in Nigeria during the study period. The model's explanatory power settled at 46.30% after adjustment for degrees of freedom. The F-statistic of 13.3518, which is statistically significant, indicates that the overall model is statistically significant.

The positive and significant effect of capital expenditure on economic services and community and social services provides evidence that increased spending on education, health, agriculture, roads and construction, and transport and communication will provide the needed boost to fostering economic growth in Nigeria and achieving Sustainable Development Goal 8 (SDG 8).

The positive effect of capital expenditure aligns with the findings of Nhemhafuki (2023), Sosvilla-Rivero et al. (2025), and Okunlola et al. (2024), while the negative effect aligns with the work of Ndanshau and Madadila (2023) and Coronel and Díaz-Roldán (2024).

#### ***Impulse Response Function***

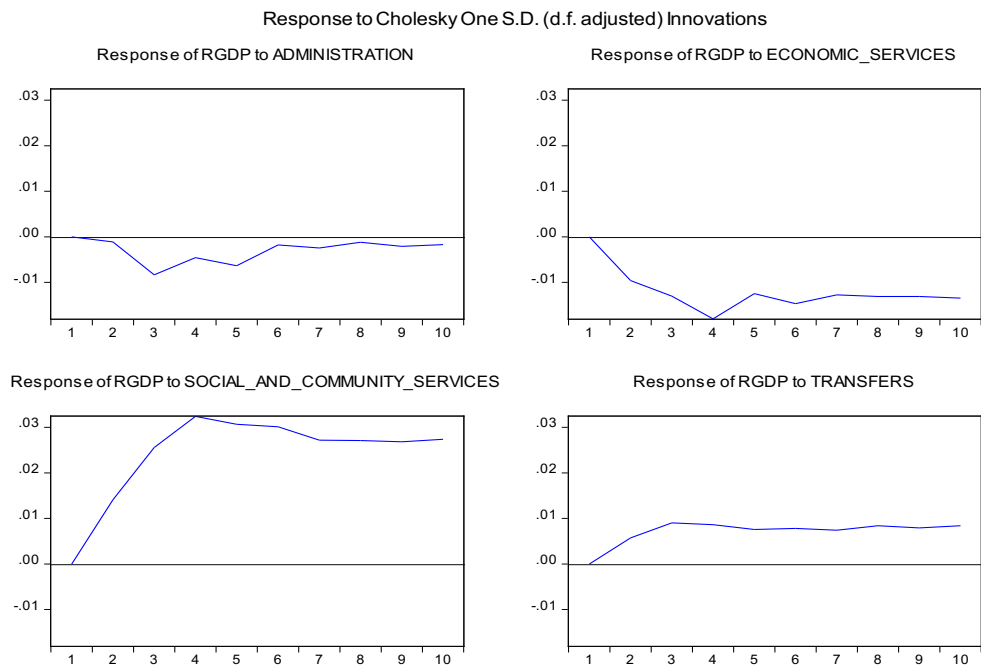
To ascertain how the economy responds to shocks in government expenditure components, this study uses impulse response functions. The results are presented in Figures 1 and 2 for the recurrent and capital expenditure components, respectively.



The impulse response functions presented in Figure 1 present how real GDP responded to shocks in recurrent expenditure components. The result shows that, apart from recurrent expenditure on administration, real GDP responded negatively to shocks in the other recurrent expenditure components (economic

services, social and community services, and transfers) in the long run. This implies that shocks in these recurrent expenditure components will likely stifle economic growth in Nigeria.

In response to shocks in capital expenditure, Figure 2 presents the impulse response function.



The result presented in Figure 2 indicates that real GDP responded negatively to shocks in both capital expenditure on administration and on economic services. Thus, shocks in these variables are likely to stifle economic growth. However, economic growth responded positively to shocks in capital expenditure for social and community services and to transfers. Hence, shocks to these capital expenditure components are likely to spur growth in the Nigerian economy.

### Diagnostic Tests

To further assess the reliability of the parameter estimates, post-estimation diagnostic tests were conducted. Such tests include the normality test for residuals, the serial correlation test, the heteroscedasticity test, and the stability test. The results of the various tests were presented and discussed as follows:

**Table 7:** Breusch-Godfrey Serial Correlation LM Test

<b>F-statistic</b>	<b>0.6948</b>	<b>Prob. F(2,9)</b>	<b>0.5241</b>
<b>Obs*R-squared</b>	4.6812	Prob. Chi-Square(2)	0.0963

Source: Researcher's Computation

The serial correlation test results in Table 7 reported an F-statistic of 0.6948, which is not statistically significant at the 5% level. Therefore,

the null hypothesis of “no serial correlation” in the model is accepted; the model is therefore free of serial correlation.

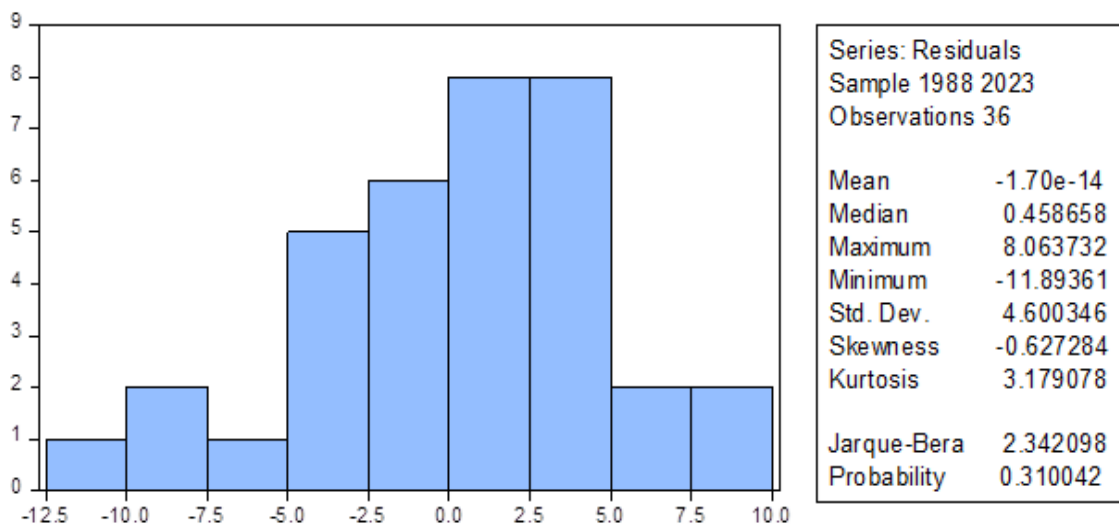
**Table 8:** Heteroskedasticity Test: Breusch-Pagan-Godfrey

<b>F-statistic</b>	<b>0.5647</b>	<b>Prob. F(23,11)</b>	<b>0.8804</b>
<b>Obs*R-squared</b>	18.9510	Prob. Chi-Square(23)	0.7041
<b>Scaled explained SS</b>	2.0395	Prob. Chi-Square(23)	1.0000

Source: Researcher's Computation

In Table 8, the heteroscedasticity test result is presented with an F-statistic of 0.5647, which is statistically insignificant at the 5% level.

Therefore, the null hypothesis of “no heteroscedasticity” is accepted; hence, the error terms have constant variance – homoscedastic.



**Figure 3:** Normality Test for Residuals

Source: Researcher's Computation

Figure 3 presents the histogram normality test result with a Jarque-Bera statistic of 2.3421, which is statistically insignificant at the 5% level.

Therefore, we concluded that the error terms are normally distributed

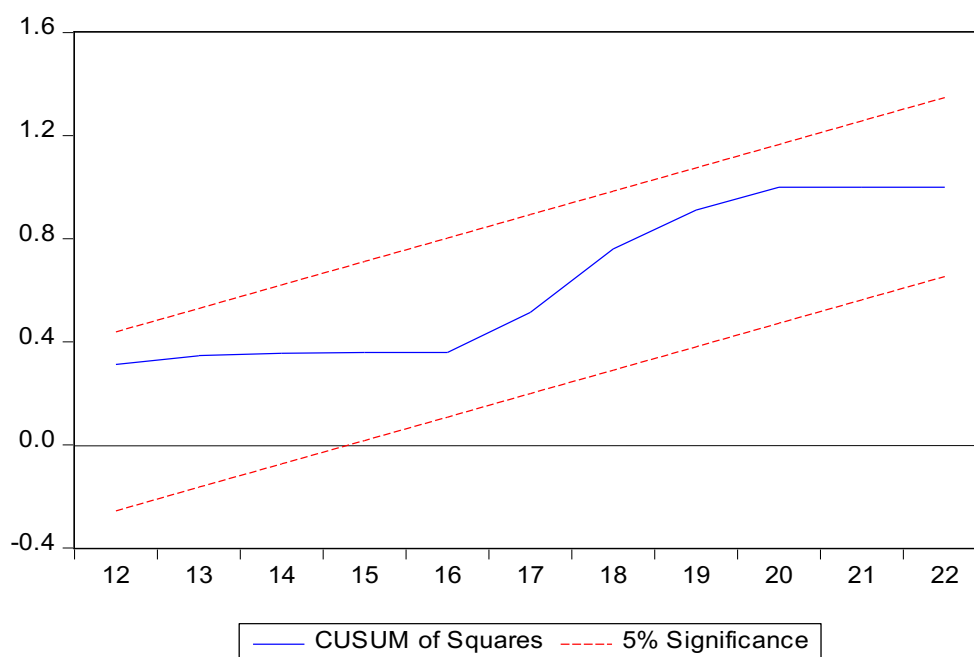


Figure 4: Cumulative Sum of Squares Test for Stability

Source: Researcher's Computation

Figure 4 presents the stability test result based on the cumulative sum (CUSUM) of squares test. Since the CUSUM of squares line lies within the 5% lower and upper bounds, it was concluded that the model's parameter estimates are stable for policy simulation.

## DISCUSSION

This study has revealed that different government expenditure components are likely to generate different effect on economic growth. While the recurrent expenditure components were mostly negative for growth, the capital expenditure components were positive. This therefore points to the fact that increased capital expenditure will increase the country's capital stock, a prerequisite for economic growth. The negative effect of administrative expenditure points to the institutional inefficiencies attributable to the Nigerian fiscal management and the prevalent corruption in the Nigerian fiscal space. This therefore signals that persistent corruption will not help Nigeria achieve its SDG 8 of "promoting sustained, inclusive and sustainable economic growth, full and productive

employment and decent work for all". Nonetheless, the findings show that to achieve SDG 8, more attention is needed to capital expenditure on social and community services, economic services, and transfers. Expanding these expenditure components relative to others will drive the growth the Nigerian economy needs.

The relationship between government expenditure and economic growth is complex, and findings from various studies suggest mixed effects depending on the expenditure components. Possible reasons and implications are:

### a) Positive Effects:

1. Keynesian Perspective: Government spending can boost economic growth by raising aggregate demand, especially during economic downturns. This is demonstrated by the positive short-term effects of government spending on economic growth in Nigeria.

2. Infrastructure Development: Government spending on infrastructure (such as transportation, energy, and telecommunications) can enhance the business environment, boost

productivity, and draw in private investment, all of which contribute to economic growth.

3. Human Capital Development: Government spending on education and healthcare can enhance human capital, which will eventually lead to a more skilled and productive workforce.

*b) Negative Effects:*

1. Crowding Out: Excessive government spending may deter private sector investment, which would slow economic expansion.

2. Inefficiency and Corruption: Inefficient and corrupt government spending can result in resource misallocation and a detrimental effect on economic growth.

3. Fiscal Deficit: Borrowing money to pay for government spending can result in a fiscal deficit, higher interest rates, and slower economic growth.

*Mixed Effects:*

1. Context-Dependent: Government spending has a context-dependent effect on economic growth, and its efficacy is influenced by elements such as institutional quality, governance, and the policy environment.

2. Sector-Specific: Government spending has a different effect on economic growth depending on the sector, with some (like infrastructure and education) having a greater influence than others (like subsidies and transfers).

3. Time-Lag: Government spending may have a delayed influence on economic growth, with long-term benefits being more noticeable than short-term ones.

***Policy Implications of Findings***

Public spending's effect on Nigeria's economic expansion has important policy implications. The following are some potential implications of the beneficial effects:

1. Capital Expenditure: To promote economic growth, the fiscal authority needs to provide more funds for the provision of infrastructure, such as telecommunications, energy, and transportation; concentrate on high-yield projects, such as investing in renewable energy sources to lessen reliance on fossil fuels and encourage sustainable growth. Building transportation infrastructure to lower transportation costs and increase connectivity and promote private sector involvement in

infrastructure development by means of public-private partnerships (PPPs).

2. Recurrent Expenditure: To enhance the development of human capital, the fiscal authority needs to allocate more resources to healthcare and education; deploy performance-based budgeting to make sure resources are used efficiently; concentrate on programs with high social returns, such as conditional cash transfer programs to support vulnerable populations, and vocational training programs to enhance skills development.

The following are some potential implications of the negative effects:

1. Recurrent Expenditure: Reduce allocation to non-essential expenditures (e.g., subsidies, transfers) to minimise crowding out private sector investment; implement fiscal discipline and transparency in budget execution; and introduce measures to reduce corruption and improve governance.

2. Capital Expenditure: Improve project appraisal and selection process to ensure only viable projects are undertaken; enhance procurement processes to reduce corruption and ensure value for money; and implement robust monitoring and evaluation frameworks to track project implementation.

The sector-specific implications are:

1. Agriculture: Increase allocation to agricultural research and development to improve productivity and implement policies to promote agricultural commercialisation and agro processing.

2. Education: Increase allocation to basic education to improve foundational skills; and implement policies to improve teacher training and accountability.

3. Health: Increase allocation to primary healthcare to improve health outcomes and implement policies to improve healthcare financing and access to healthcare services.

The institutional implications are as follows:

1. Fiscal Federalism: Review the revenue allocation formula to ensure equitable distribution of resources and implement fiscal discipline and transparency in revenue management.

2. Public Financial Management: Strengthen budget execution and procurement

processes; and implement robust monitoring and evaluation frameworks.

The policy implications of public expenditure components for Nigeria's economic growth emphasise the need for greater funding for infrastructure development, more efficient recurrent spending on healthcare and education, greater fiscal discipline and transparency, improved project appraisal and selection procedures, stronger procurement procedures, and robust monitoring and evaluation frameworks. Nigeria may attain sustainable development and maximise the effect of public spending on economic growth by putting these ideas into practice.

## CONCLUSION AND RECOMMENDATIONS

The role of the public sector in a modern economy cannot be overemphasised. This is because fiscal stimulus steers the economy towards the desired direction. In this paper, the effects of recurrent and capital government expenditure on the growth of the Nigerian economy from 1985 to 2022 were examined. The study utilised the Vector Error Correction Model (VECM) in the analysis. Findings from the study indicate that most recurrent expenditure components had a negative and significant effect on economic growth, while capital expenditure components exerted a positive effect on economic growth in Nigeria during the study

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period. From the findings of this study, the following recommendations are offered.

i) Effort should be made to increase expenditure on social and community services especially expenditure on health and education (expenditure on human capital development) to a level that has been globally established that can induce and sustain economic growth in Nigeria because as shown in the analysis, expenditure on human capital has the potential to drive economic growth even when such expenditure in Nigeria is low compared to the globally acceptable standard.

ii) Efforts should be made to reduce the cost of governance and channel such funds to more growth-inducing expenditure, such as expenditure on social and economic services, because, as shown in this study, expenditure on administration (the cost of governance) has no significant impact on economic growth.

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## Conflict of Interest

None.

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